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Undergraduate Medical Education In Prepaid Health Care Plan Settings

Joseph C. Isaacs and Morton A. Madoff, M.D.

Abstract—The authors in this article focus on prepaid health care plan (PHCP) involvement in undergraduate medical education and report the results of two surveys undertaken to determine the extent of such involvement. Additionally, the authors provide a review of published studies that have examined the costs of such training. The survey findings show that current use of PHCPs for educational purposes is distributed throughout all four years of undergraduate medical education and is apparently on the rise. In addition to 26 medical schools reporting formal educational arrangements with health maintenance organizations, 35 other schools indicated that they either planned or were seriously considering such arrangements with PHCPs, had ongoing ad hoc arrangements with PHCPs, or attributed their lack of an arrangement to an absence of appropriate opportunities rather than to any conceptual reservations. Three studies represented the extent of the published research that could be identified on the costs of formal undergraduate clinical training in PHCPs. Serious inconsistencies in the methodologies employed in those studies resulted in widely varying and even contradictory findings.

Despite differences of opinion about the extent of a projected oversupply of physicians, policymakers in government and academic medicine have recognized that primary care practitioners continue to be in short supply. The federal government, for its part, has targeted the shrinking number of health professions education dollars to primary care training programs. At the same time, the medical education community has continued its efforts to expand beyond the traditional tertiary care training grounds and identify additional primary care educational opportunities in ambulatory care settings. One such setting, prepaid health care plans (PHCPs), such as health maintenance organizations (HMOs), has experienced steady growth over the past decade. The federal Office of Health Maintenance Organizations reported that the number of HMOs nationwide grew from 30 in 1970 to 243 in 1982. Total membership in HMOs rose from 2.9 million to 10.3 million in the same period. Respecting these trends, the academic medical community has a growing interest in the feasibility and usefulness of PHCP sponsorship or affiliation for both educational and patient care purposes.

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Presumably, the participation of medical students in undergraduate and residents in graduate ambulatory care training results in substantial costs. Those costs are attributable, among other things, to the reduced productivity of members of the medical and professional staff because of the presence of medical students, additional overhead expenses for instructional facilities, faculty compensation, and payment of stipends to residents at the graduate level. Up until now, administrators of PHCPs have shown considerably more interest in participating in graduate than in undergraduate medical training. At the graduate level, PHCPs receive the service benefit of the residents' clinical participation and may potentially recruit them for their staffs. Involvement in undergraduate medical education, on the other hand, is generally viewed by the PHCP as a more costly proposition. Medical students offer limited service benefits and require more instructional time from staff members. In this article, the authors will focus on undergraduate level training.

As price competition and cost-consciousness become more intense among providers of health care, the issue of financing undergraduate and graduate ambulatory care training in the PHCP setting will become more contentious. If the financial viability of these settings as primary care training sites is to be assessed adequately, accurate identification of the costs involved will be critical. The extent and forms of PHCP involvement in undergraduate ambulatory care training to date, as well as the published studies that have examined the costs of such training, will be examined in this article.

Two Surveys

The Association of American Medical Colleges (AAMC) conducted a survey of U.S. medical schools to identify (*a*) the extent of the formal involvement of undergraduate clinical medical education with prepaid health care plans, such as health maintenance organizations and individual practice associations (IPAs), and (*b*) the methods and data being used to analyze the costs associated with medical education in those settings. The formal involvement with PHCPs was understood to mean that an established agreement existed between the medical school and the PHCP.

At approximately the same time, a Tufts University questionnaire was sent to all operational PHCPs in the United States asking about their current and/or planned association with medical student teaching activities within their ambulatory settings and the hospitals to which they referred their enrollees. They were also asked whether they had carried out cost analyses of these educational activities.

The AAMC survey questionnaire was mailed in July 1982 to the deans of all 127 of the nation's medical schools. A follow-up mailing to 30 nonrespondents was made in November 1982. By January 1983, a total of 124 responses were received for a 97.6 percent overall response rate. Of these respondents, 26 (or 21.0 percent of all respondents) reported that their medical schools had some formal arrangement with one or more health care plans to enable undergraduate medical students to receive a portion of their clinical training, on either a required or elective basis, in such settings. The 26 schools listed a total of 32 PHCPs with which they had programs. Surveys undertaken in 1974 and 1977 had found that fewer than 15 percent of the academic medical centers nationwide had developed a formal educational affiliation with an HMO (1, 2). Of the 98 schools having no ar-

rangements as of the 1982 survey, 17 reported that there were plans to pursue such relationships in the future. Seven others stated that such activities were under consideration. Thus, at 50 (or 40.3 percent) of the responding medical schools, formal arrangements with PHCPs to provide the setting for undergraduate clinical education activities either existed, were planned, or were under serious consideration. In addition, eight other medical schools noted arrangements with PHCPs on an informal ad hoc basis for curriculum electives.

The Tufts survey was conducted from April to September 1982. A total of 249 operational PHCPs nationwide were sent questionnaires. Of these, 154 were returned for a 61.8 percent rate of response. Of the respondents, 44 (or 28.6 percent) reported involvement with 44 medical schools in undergraduate medical training, and 73 (or 47.4 percent) noted some type of health professions teaching. The variance between the undergraduate figure and the findings of the AAMC survey may be attributable to the lower overall response rate achieved by the Tufts survey and the fact that it did not differentiate between formal and informal (ad hoc) medical center/PHCP arrangements. The latter factor contributed to the finding that several HMOs indicated the existence of teaching relationships where medical schools reported none in the AAMC survey. On the other hand, the results of the Tufts survey regarding health professions training generally were very similar to the findings of a 1979 study of 77 HMOs by Fink (3). The 1979 research indicated that 62 percent of the responding HMOs with enrollments greater than 2,000 had some form of medical staff involvement in undergraduate medical training and that 75 percent participated in some form of health professions education (for example, graduate medical education or allied health training).

Among the 44 PHCPs responding affirmatively to the Tufts survey, 26 were begun before 1975 and 16 after 1975; two did not report their starting date. On the basis of the size of their prepaid enrollment, four listed less than 5,000 members, seven from 5,000 to 10,000 members, 19 from 10,000 to 50,000 members, and 12 more than 50,000 members. Two did not specify the number of their members. On the basis of their organizational type, 25 were staff model HMOs, 13 were group model, three were individual practice associations and three took some other form (for example, group network). In a staff or group model HMO, the physicians are direct salaried employees of the HMO and practice in a group setting as staff or are members of a group practice that has a contract with the HMO to see primarily prepaid patients. In the IPA model, individual physicians have contracts with the IPA, are paid on a fee-for-service basis, and practice in their own offices seeing both prepaid and fee-for-service patients. Five of these PHCPs indicated that they had conducted cost analyses of their undergraduate teaching activities.

Thirty-three of the responding PHCPs reported the number of medical students in training in their settings. Among the eight group models reporting this figure, the number of students taught ranged from 2 to 109 (mean = 42, S.D. = 42.7). For the 20 staff models reporting this figure, the range was from 1 to 68 (mean = 11, S.D. = 15.7). The number of students taught did not show a significant relationship to either the size or the age of the PHCPs.

Undergraduate Affiliations

As noted previously, the 26 medical schools reporting formal PHCP affilia-

tions for undergraduate education in the AAMC survey indicated that their arrangements were with 32 staff or group model HMOs. Four of these schools reported utilization of multiple PHCPs (that is, two schools each had arrangements with two different HMOs, while two other schools each had arrangements with three). Geographically, the vast majority (20 out of 26) of the medical schools reporting affiliations were located either in the west or northeast, where the preponderance of U.S. medical schools are located. Of the 11 western schools reporting affiliations, six are situated in California. Eight of the western respondents (including all those in California) have arrangements with PHCPs in the Kaiser-Permanente system. A listing of the 26 schools, the PHCPs with which they are affiliated (that is, through some formal arrangement), and the types of teaching activities involved is presented in Exhibit 1 on the basis of geographic location.

Seventy-nine percent (98 out of all 124 respondents) said that primary care experience in an ambulatory care setting was a required part of the medical school's curriculum. Only 61.5 percent (16 out of 26) of those schools having a formal undergraduate arrangement with a PHCP reported this curriculum requirement. Of the 98 schools reporting no formal PHCP arrangements, 82 (or 83.7 percent) did require ambulatory care training experience. In addition, among the 26 medical schools with a PHCP affiliation, only six (23.1 percent) indicated that training specifically in a prepaid health care plan setting was a requirement of their curricula. These involved the medical schools at Cornell University, George Washington University, Morehouse College, Texas A & M University, Wayne State University, and the University of Washington.

Extent of Educational Activity

Findings from the AAMC survey on the extent (that is, number of students and types of training) of undergraduate medical education in HMOs are summarized in Table 1. Eleven of the 26 medical schools (42.3 percent) with formal PHCP arrangements use them for training in the first year of their undergraduate programs. Such training usually takes the form of 1-to-4-hour seminars weekly to introduce clinical medicine to as few as two and as many as 120 freshmen. However, the majority of those first-year seminars in PHCPs are conducted for groups of between two and 20 students. In addition to introductory seminars, first-year students at two medical schools, the University of California at Los Angeles (UCLA) and the University of Washington, participated at the PHCPs in physical diagnosis.

Twelve of the 26 PHCP-affiliated schools (46.2 percent) used the prepaid settings for training in the second undergraduate year, involving from three to 100 sophomores, the latter at the University of Minnesota Medical School in Minneapolis. Generally, however, classes included from 10 to 20 second-year students. Two schools offered seminars (as they did in the freshman year) introducing clinical medicine in the PHCP setting to sophomores. During the sophomore year, however, undergraduate activity at PHCPs usually involved instruction and experience in physical diagnosis. The amount of training time devoted to physical diagnosis at the PHCPs varied from 30 to 294 hours extended over a 12-to-14-week period. The latter program was at the Harvard Community Health Plan, where six second-year students received training in physical diagnosis for seven hours per day, three days per week, over a 14-week period.

In the third year of undergraduate medical training, 14 of the 26 PHCP-affiliated schools (53.8 percent) used the PHCP setting for both seminars and clerkships involving between 15 and 175 students. The student figures at the University of California at Los Angeles and George Washington University were unusually high at 175 and 150, respectively. In most cases, however, the third-year PHCP clerkship programs involved between 24 and 44 students. As reported by 10 of the 14 schools, this training consisted primarily of required clerkships in such disciplines as medicine, surgery, pediatrics, obstetrics and gynecology, community health, and family medicine. These clerkships ranged in length from one to six weeks, with most falling at the high end of the range.

Eighteen of the 26 PHCP-affiliated schools (69.2 percent) sponsored fourth-year training at PHCPs. This activity usually takes the form of one or more elective clerkships which emphasize not only various medicine and surgery subspecialties but also outpatient and ambulatory care with a particular orientation toward primary care in the PHCP setting. These senior-year elective clerkships typically last four or six weeks, though a University of Washington urology clerkship was two weeks long, and a clerkship in medicine for seniors at the University of California at San Francisco lasted 14 weeks. The number of fourth-year students participating in the PHCP-based elective clerkships ranged from as few as two at two schools to 72 in an elective clerkship in medicine at the University of Hawaii. However, in the majority of the fourth-year clerkship programs cited, only from two to 10 students were involved.

Education Costs in PHCPs

Six medical schools in the AAMC survey (23.1 percent of those with formal PHCP arrangements) reported that they provide financial compensation to the PHCP specifically for support of medical student teaching activities. They are the University of North Dakota School of Medicine, the University of Washington School of Medicine, the Medical College of Pennsylvania, the University of California, Davis, School of Medicine, the University of Hawaii John A. Burns School of Medicine, and George Washington University School of Medicine and Health Sciences.

Although a number of studies have been conducted to calculate the costs of residency training programs in the PHCP setting (4–6), published research findings on the costs of undergraduate programs in such settings have been limited essentially to studies at the George Washington University Health Plan (7–9). Deans at two other medical schools replied affirmatively to the question whether or not any study was planned or had been conducted by the medical school or PHCP to determine or estimate the costs of undergraduate medical student instruction in the prepaid health care plan setting. They were the deans of the medical schools at the University of Washington and the University of California at Davis. However, it was learned from telephone follow-ups in October 1983 that the University of Washington study was still in progress and that the University of California at Davis study had gone unfunded. The three George Washington University Health Plan studies of undergraduate training costs were completed in 1977, 1979, and 1980.

In 1977, Lindenmuth and colleagues (7) examined the effect of third-year clinical clerks on physician productivity in the George Washington University Health Plan. The physicians kept logs of the length of each of their clinical sessions and the number of patients seen during

EXHIBIT 1

Formal Undergraduate Medical Training in Prepaid Health Care Plan Settings by Medical School and Geographic Location, Affiliated Health Maintenance Organizations (HMOs), and Educational Activity, 1982

Location and School	Affiliated HMO	Educational Activity
Northeast		
Brown University	Rhode Island Group Health Association	Freshman and junior seminars and senior elective clerkships
University of Connecticut	North Central Connecticut HMO	Freshman and sophomore seminars and senior elective clerkships
Cornell University	La Guardia Hospital	Junior required clerkship and senior elective clerkship
George Washington University	George Washington University Health Plan	Sophomore seminar, junior required clerkship, and senior elective clerkship
Georgetown University	Kaiser Georgetown Community Health Plan	Senior elective clerkship
Harvard University	Harvard Community Health Plan	Freshman and sophomore seminars, junior and senior elective clerkships
University of Massachusetts	Fallon Community Health Plan	Freshman and sophomore seminars and junior seminars and required clerkship
Medical College of Pennsylvania	HMO of Pennsylvania	Senior elective clerkship
Tufts University	Matthew Thornton Health Plan	Senior elective clerkship
South		
Morehouse College	Health Care, Inc.	Freshman and sophomore seminars
Texas A & M University	Centroplex Health Plan	Junior and senior elective clerkships
Midwest		
University of Minnesota, Minneapolis	Group Health Plan	Sophomore seminars and senior elective clerkship
University of North Dakota	Hettinger	Senior elective clerkships
Wayne State University	Health Alliance Plan, Comprehensive Health Service of Detroit, Group Health Association of Southeast Michigan	Freshman seminars and senior elective clerkships
Washington University (St. Louis)	Medical Care Group of St. Louis	Freshman seminars

Exhibit 1 (continued)

West		
University of Arizona	Prima Care, El Rio Neighborhood Health Center	Junior required clerkship and senior elective clerkship
University of California, Davis	Kaiser Hospital, Sacramento	Sophomore seminars, junior required clerkship, and senior elective clerkships
University of California, Los Angeles	Southern California Kaiser	Freshman seminars, junior and senior required clerkships, and senior elective clerkships
University of California, San Francisco	Kaiser Foundation Hospital, San Francisco; Kaiser, Honolulu; Kaiser, Oakland	Freshman and sophomore seminars and senior elective clerkship
University of Hawaii	Kaiser-Permanente	Junior and senior required clerkships and senior elective clerkships
Loma Linda University	Kaiser-Permanente Medical Care Program	Junior required clerkship
University of New Mexico	Lovelace Medical Center	Senior elective clerkships
Oregon Health Sciences University	Kaiser-Permanente	Junior required clerkship
University of Southern California	Kaiser-Permanente	Freshman and sophomore seminars and senior elective clerkship
Stanford University	Kaiser-Permanente, Midpeninsula Health Service	Freshman and sophomore seminars, junior required clerkship, and senior elective clerkship
University of Washington	Group Health Cooperative of Puget Sound	Freshman and sophomore seminars, junior and senior required clerkships, and senior elective clerkships

the session. All patients were asked to indicate on a questionnaire whether they were seen by a physician alone or by both a medical student and a physician and whether or not they were satisfied with the care provided. It was found that students significantly increased the number of patients seen during a clinical session without significantly adding to the length of a session or the rate of dissatisfaction among patients. The findings suggest that third-year medical students can provide services to offset the costs introduced by their presence and, therefore, can represent a net benefit to physician productivity in the primary care practice setting.

Using the same third-year primary care clerkship as in Lindenmuth's study, Pawlson and colleagues (8) examined medical student instructional costs and obtained results contradictory to the earlier study. The cost of education in the Pawlson study was determined by a cost-finding technique similar to the methodology developed by Carroll in his pioneering studies in teaching hospitals (10). Equal importance was given in the study to the teaching, research, and patient care functions, and the allocated costs for those functions were shared proportionately. The teaching of third-year medical students occupied 22 percent of the time of faculty physicians in clinical sessions in the HMO practice. Based on faculty members' overall time allocation and/or actual salaries, the total faculty labor costs (teaching and supervision) amounted to $35.20 per student per day. The overall cost per student per day for the clerkship was $54.20, with the faculty cost component accounting for the largest portion.

In 1980, using an incremental cost approach, Pawlson and colleagues (9) examined the cost of instructing medical

TABLE 1

Undergraduate Medical Education in Prepaid Health Care Plan Settings By Year of Training, Number of Participant Schools Responding, Range of Student Involvement, Type of Activity, and Duration of Training, 1982

Year of Training	No. of Schools ($n = 26$)	No. of Students		Type of Educational Activity	Duration
		Range	Modal Range		
Freshman	11	2–120	2–20	Seminars to introduce clinical medicine Physical diagnosis	Seminars—1 to 4 hours weekly
Sophomore	12	3–100	10–20	Physical diagnosis Seminars introducing clinical medicine	Physical diagnosis—30 to 294 hours over 12 to 14 weeks
Junior	14	15–175	24–44	Required clerkships in primary care specialty areas Seminars in community medicine	Clerkships—from 1 to 6 weeks (most 6 weeks)
Senior	18	2–72	2–10	Elective clerkships in medicine and surgery subspecialties, outpatient and ambulatory care, and primary care in the HMO setting	Clerkships—from 2 to 14 weeks (most 4 weeks)

students participating in a variety of ambulatory care (chiefly family practice) experiences in three clinical practice sites: a consumer-owned HMO, a university-administered HMO (that is, the George Washington University Health Plan), and the offices of fee-for-service physicians.

The costs of medical training in the consumer HMO ranged from $5 per student per day for a first-year observational experience to $112 per student per day for a second-year preceptorship with direct patient care involvement. The major costs could be attributed to fewer patient care visits resulting from the presence of the students. In the university HMO setting (that is, the George Washington University Health Plan), the results again differed from previous findings and suggested that a loss of approximately five visits per day at a cost of $82 per student per day was attributable to the same third-year required primary care clerkship as in the earlier studies. Moreover, if extrapolated to a 40-week academic year, the results from the consumer-owned HMO would suggest costs ranging from $1,000 per student year for a first-year observational experience to $22,400 per student year for a second-year, "hands-on" preceptorship in a prepaid health care setting.

Discussion

Medical schools are being encouraged to provide more ambulatory primary care experiences as a means of influencing greater numbers of graduating physicians to choose a career in primary care. At the same time, the growth of prepaid health care plans continues to be fostered by both the public and private sectors as a viable lower cost health care delivery alternative to traditional inpatient hospitalization and physician services plans. These are not new developments, and they are not likely to change soon. In light of this, medical educators, administrators, and others responsible for the planning and operation of primary care teaching programs at medical schools require a useful body of literature with respect to the nature and costs associated with the use of PHCPs as ambulatory care clinical training sites.

The findings of the surveys reported here reveal that the use of PHCPs for educational purposes is distributed throughout all four undergraduate years and is apparently on the rise. In addition to the 26 medical schools reporting formal arrangements with HMOs, 35 other schools indicated that they either planned or were seriously considering such arrangements, had ongoing ad hoc arrangements with PHCPs, or attributed not having such an arrangement to a lack of opportunities rather than to conceptual reservations.

Despite this growth in interest on the part of medical schools in associating formally with PHCPs for undergraduate training, research on the cost/benefit aspects of these associations has not kept pace. Although various PHCPs reported that they conducted internal analyses of undergraduate medical education costs, none of these studies has been published. Thus, the three George Washington University studies represent the extent of the published research found by the authors or reported by survey participants on the costs of formal undergraduate clinical training in PHCPs. These studies had inconsistent and even contradictory findings in relation to a required third-year primary care clerkship at the same HMO site. The substantial differences may largely be attributable to differences in methodologies and the excessive influence they may exert on the determination of study outcomes. More reliable cost

information in this area can be compiled with the application of improved and more consistent methodologies.

References

1. GIACALONE, J. J., and HUDSON, J. I. Primary Care Education Trends in U.S. Medical Schools and Teaching Hospitals. *J. Med. Educ.*, **52**:971–981, 1977.
2. SCHROEDER, S. A., WERNER, S. M., and PIEMME, T. E. Primary Care in the Academic Medical Centers: A Report of a Survey by the AAMC. *J. Med. Educ.*, **49**:823–833, 1974.
3. FINK, R. J. HMO's as an Educational Resource: Training Programs for Medical Students and Residents. In *Proceedings of the 29th Annual Group Health Institute.* Washington, D.C.: Group Health Association, 1979, Pp. 208–215.
4. STERN, R. S., et al. Graduate Education in Primary Care. *N. Engl. J. Med.*, **297**:638–643, 1977.
5. KAHN, L., WIRTH, P., and PERKOFF, G. T. The Cost of a Primary Care Teaching Program in a Prepaid Group Practice. *Med. Care*, **XVI**:61–71, 1978.
6. PANTON, D. M., MUSHLIN, A. I., and GAVETT, J. W. Marginal Ambulatory Teaching Cost Under Varying Levels of Service Utilization. *Med. Care*, **XVIII**:668–674, 1980.
7. LINDENMUTH, N. W., STONE, A. W., and DONALDSON, M. The Effect of Third-Year Clinical Clerks on Physician Productivity in a Primary Care Practice. *J. Med. Educ.*, **53**:357–359, 1978.
8. PAWLSON, L. G., SCHROEDER, S. A., and DONALDSON, M. S. Medical Student Instructional Costs in a Primary Care Clerkship. *J. Med. Educ.*, **54**:551–555, 1979.
9. PAWLSON, L. G., WATKINS, R., and DONALDSON, M. S. The Cost of Medical Student Instruction in the Practice Setting. *J. Fam. Pract.*, **10**:847–852, 1980.
10. CARROLL, A. J. *Program Cost Estimating in a Teaching Hospital.* Evanston, Illinois: Association of American Medical Colleges, 1969.

Participation in Continuing Medical Education Of General Practitioners in New Zealand

Philip M. Barham, M.B. Ch.B., and John Benseman

Abstract—Continuing professional education has become increasingly recognized as an essential element of a professional's working life. Because participation in continuing education is usually on a voluntary basis, it is essential that organizers of continuing education understand the patterns of participation among their prospective clientele. Such an understanding can help identify areas of deficiency in program provisions as well as indicate possible ways of rectifying them. The study reported here surveyed approximately one-third of all general practitioners in New Zealand on their present participation in continuing medical education (CME), their attitudes toward continuing learning, and their specific preferences for future CME programs. Although overall rates of CME participation are very high, there are nonetheless significant variations in the amount of continuing education that general practitioners undertake. The rate of CME participation appears to be linked with the general practitioner's degree of involvement in a wide range of professional activities, and those general practitioners who are only minimally involved have lower rates of CME participation.

One of the few, truly revolutionary ideas to gain prominence in recent times among educationalists is that education can and indeed should be a lifelong process. The realization that education should no longer be largely confined to the compulsory schooling sector has very extensive ramifications for most adult groups and institutions.

Within the context of work, most occupational groups now recognize explicitly that an initial training/education program is by no means sufficient to equip people adequately with the skills, knowledge, and attitudes appropriate to maintaining optimum levels of service. Rather, these initial training programs are to be seen more as learning foundations which will be continually built on and developed as a result of further education and working experience.

Because of the added impetus of the potential effects of continuing education on human life, the argument for continuing education among the health professions has often centered on the need for compulsory continuing medical education (CME) rather than voluntary partic-

The work on which this article is based was part of a survey funded by the Sir William Goodfellow Trust and the New Zealand Medical Education Trust.

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ipation. This debate has been particularly lively in the United States, where in 1977 28 of the 50 states had some form of compulsory CME for relicensure. Amid all the controversy over the desirability and/or efficiency of mandatory CME, at least two states (South Dakota and Montana) have since withdrawn CME requirements for relicensure, and several others appear likely to emulate this move.

Outside the United States, virtually all participation in CME has been on a voluntary basis. This is true in New Zealand and appears very unlikely to change within the foreseeable future.

Given the acceptance of the need for continuing education on the one hand and the voluntary participation of the clientele on the other, it is important to understand the current extent and patterns of CME participation among medical practitioners. Research of this kind not only provides an invaluable overview of the ways in which CME programs are used by practitioners but also indicates specific groups of practitioners whose needs are not met by the existing provision and possible reasons for nonparticipation. The latter point is especially important, as all forms of education provision are latently selective in some way and thereby inevitably serve sections of the profession disproportionately.

Even under a mandatory system of CME, a clear understanding of the nature of participation in continuing education can provide a valuable guideline for increasing the effectiveness of the participants' involvement in the learning process. Therefore, since participation research analyses constitute an essential first step in CME planning, the authors conducted a survey for the following purposes:

1. To identify the social and professional characteristics of the general practitioners within the designated target area for CME programs.

2. To identify general practitioners' present sources and degrees of participation in CME and to identify groups of general practitioners according to their present levels of CME participation in order to indicate possible "target" groups for future program planning.

3. To assess general practitioners' interest and attitudes toward further CME participation.

4. To identify curriculum areas general practitioners judge to be of interest and relevance for inclusion in future CME programs.

5. To gauge interest in CME and the suitability of times and various educational delivery systems used in continuing education.

In this paper, the authors report on the general findings of the study regarding patterns of CME participation, make some tentative interpretations of those findings, and suggest possible implications for future CME planning. (Findings on other sections of the report are available on request from the authors.)

Method

The target population for the survey covered all general practitioners responsible for primary health care within the University of Auckland area, which includes over one-third of all general practitioners in New Zealand. A minimum requirement of two working days per week by the practitioners was set for inclusion in the sample.

The research data were gathered in 1982 by means of two questionnaires and a formal interview. Three weeks prior to the formal interview, the authors mailed the physicians two questionnaire forms. These asked questions concerning the practitioners' preferences regarding learn-

ing methods, 87 curriculum topics, and preferred times and locations for formal CME programs. The follow-up interview carried out by one of the authors covered the following:

1. Demographic and professional characteristics—sex, age, qualifications, country of base qualification, years in general practice, hospital experience, practice in other branches of medicine, special medical interests, practice type and location, health district and practice area, base population, practice-functioning details.

2. Present patterns of CME consumption—covering formal (for example, conferences and courses), informal (for example, talking medicine with colleagues), and independent forms (for example, audio cassettes and reading); the extent of usage; assessment of interest in CME generally, and the identification of barriers to further CME involvement.

The definition of CME used in the study was deliberately broad in recognition of the variety of ways in which people learn—ranging from taking a formal course through independently reading professional literature.

As the main purpose of the survey was to understand the extent and variations of CME involvement among general practitioners, the respondents were divided into three broad categories according to an assessment of how much CME they had been involved in over the previous 12 months. The assessment included formal and independent forms of CME but did not include the more problematic informal forms. The latter were thought to be too difficult to quantify satisfactorily.

The variations in the respondents' CME involvement were then analyzed across the various social and professional characteristics mentioned previously. In this way, the analysis was able to show those variables that discriminated among general practitioners with regard to their CME participation and indicate the strength of the relationship between the variables and the behavior (CME participation).

Results

Of the 526 general practitioners identified as being eligible for the study, a total of 474 (90.1 percent) were interviewed. All interviews were carried out by one of the authors (a former general practitioner) at the respondent's office. After 169 general practitioners had been interviewed, the authors realized that some of the response categories were insufficient in some instances (for example, the amount of time spent on CME was much greater than originally envisaged) and that some significant areas of CME were not covered in the original questionnaire (for example, respondents' assessment of CME). For these reasons the interview schedule was expanded to incorporate these modifications.

The information on which this article is based is derived from the final 305 interviews. Subsequent comparison of the first 169 respondents with the other 305 respondents showed no significant variation in their characteristics or reported behaviors. Of those general practitioners not contacted (52), 12 had no telephone currently listed or had a confidential number, raising serious doubts as to their eligibility as general practitioners.

Analysis of the respondents' involvement in a range of CME activities over the previous 12 months showed that the level of continuing education activity among general practitioners generally was very high. More than three quarters of the respondents had attended at least one formal course or conference; of these, just

over half (39 percent of the total) had attended two or more. Over half (56 percent) of the respondents reported daily opportunities to talk medicine with colleagues.

Twenty-six percent of the respondents were involved in some form of allied health professional conference, and 33 percent reported involvement in an educational small group (Table 1). The use of reading as a source of information and stimulus varied widely according to the type of publication involved (Table 2).

Pharmaceutical company-sponsored journals were the most widely read form of professional reading, with 86 percent reporting "moderate" or "extensive" use. Academic journals, on the other hand, were used much less, and 29 percent reported that they did not read that kind of literature at all. Textbooks were still widely used, although usually only on a limited scale. Other, special-interest journals were not read much.

Audio cassettes were increasingly used as part of the general practitioner's CME "repertoire," with over half (51 percent) of the respondents utilizing these resources. Despite the generally high level of CME involvement by a majority of general practitioners, there was still a significant number of general practitioners for whom continuing education, in any form, apparently meant little or nothing.

For the purposes of analysis, the total group was divided into three subgroups according to their CME involvement—those who had a low level of participation (39 percent of the total), a middle group with a medium level of activity (38 percent), and a third group of physicians who were very active and had a high level of involvement (23 percent).

Each of the three groupings of respondents, and especially the low and high CME groupings, was atypical of the total group to varying degrees in a number of ways. For example, those general practitioners who tended to be less active in CME included disproportionately high numbers of women (especially older); those aged less than 30 years and over 60 years; those in general practice less than six years and over 20 years; those with minimal hospital experience (1 year); those practicing less than four days per week in general practice; those in group practices with less than three others; those in solo practice; those practicing in small population areas (less than 20,000 peo-

TABLE 1

New Zealand General Practitioners' Involvement in Informal Continuing Medical Education Group Activities During 12 Months Prior to Interviews Conducted in 1982

Activity	No.	Percent
Allied health professional conferences		
Extensive	3	1
Moderate	18	6
Limited	58	19
None	226	74
Total	305	100
Small groups		
Extensive	3	1
Moderate	30	10
Limited	67	22
None	205	67
Total	305	100

TABLE 2

New Zealand General Practitioners' Use of Professional Reading Sources During 12 Months Prior to Interviews Conducted in 1982

Publication	No.	Percent
Academic journals*		
Extensive	9	3
Moderate	40	13
Limited	168	55
None	88	29
Total	305	100
Pharmaceutical company journals†		
Extensive	91	30
Moderate	171	56
Limited	35	11
None	8	3
Total	305	100
Other periodicals‡		
Extensive	4	1
Moderate	21	7
Limited	48	16
None	232	76
Total	305	100
Textbooks		
Extensive	5	2
Moderate	70	23
Limited	171	56
None	59	19
Total	305	100

* For example, *New Zealand Medical Journal.*
† For example, *New Ethicals, Modern Medicine.*
‡ For example, *Sports Medicine.*

ple); those with no night or weekend rosters but using emergency services at night; those with difficulty arranging cover; those practicing in an area more than 30 kilometers from a base hospital; those with largely out-of-date textbooks.

On the other hand, among general practitioners with high levels of CME participation, there was overrepresentation of the following groups: middle-aged males; those trained in India, Sri Lanka, and Hong Kong; those with six to 15 years of general practice experience; those practicing in another branch of medicine concurrently; those with little difficulty in arranging cover; those acting as host practitioners to trainees; those with largely up-to-date textbooks.

Discussion

Although it is debatable as to what may constitute satisfactory minimum levels of CME, voluntary CME participation among New Zealand general practitioners appears to be working adequately well, with most practitioners maintaining a reasonable level of ongoing professional education. (A fuller discussion of this area has been presented by Houle [1].) The adequacy of attendance and the quality of the educational inputs, however, can probably never reach an ultimate, or satiated, level in that there will probably always be new and changing groups and areas of need to serve. While the variations in CME participation among the different groups of general practitioners

were not great overall, this study has been able to identify a number of key characteristics of general practitioners which discriminate sufficiently to show possible underlying reasons for these present variations in CME behavior.

High levels of CME activity were most clearly related to those general practitioners whose characteristics suggested they are in the "mainstream" of the profession. That is, demographically their characteristics were consistent with the dominant distributions of the profession; they were well established in their careers and yet still had considerable potential and years ahead for practicing; their practices were well organized; they had good resources and regular contact with their professional colleagues; and these general practitioners were also valued as professional models for trainees.

In contrast, general practitioners who had low levels of CME involvement could be seen as more professionally isolated members of the profession. They were more often members of one of the smaller demographic groups; they were just beginning or coming to the end of their professional careers; they had completed a minimum training; they practiced in ways (for example, less than full-time or solo) and in geographical areas that tended to isolate them from professional contact and interaction; they had poor reference resources and often had forms of practice organization that made them less available for CME.

Thus, to generalize, variations in CME participation patterns would appear to be influenced largely by the respondents' "location" within the profession. Those general practitioners whose characteristics, practice type, and organization place them in the profession's mainstream tend to be more active in their ongoing education. Those whose involvement in the profession is more isolated or peripheral have a correspondingly lower degree of CME involvement. Many others, of course, fall midway between these extremes and have a median degree of involvement in continuing education.

Because of the inherent difficulties involved in facilitating learning with reluctant participants, the authors believe it is important to attract voluntary learners into CME. While the current levels of participation are undoubtedly lower than with a compulsory CME system, it appears highly unlikely that such an alternative would produce a concomitantly higher level of learning. However, by understanding the constraints and limitations of the voluntary forms of provision currently in operation, extensions and innovations can be planned that will involve greater numbers and rates of participation among practitioners.

Reference

1. HOULE, C. *Continuing Learning in the Professions*. San Francisco, California: Jossey-Bass, 1980.